PB85-242097

Small Generator Demonstration Project

Tacoma-Pierce County Health Dept., WA

Prepared for

Environmental Protection Agency, Seattle, WA

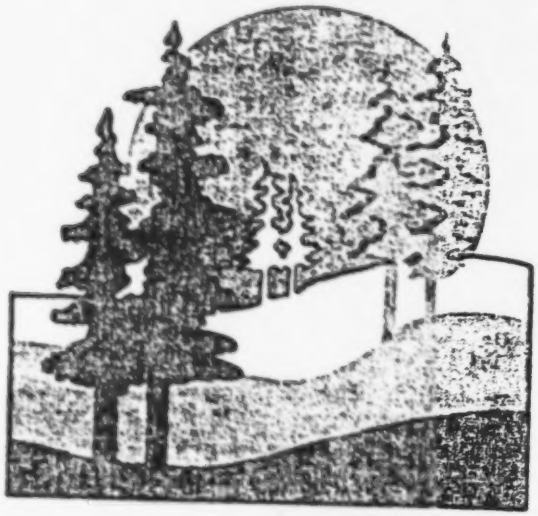
Feb 85

U.S. Department of Commerce
National Technical Information Service
NTIS

EPA 910/9-85-124

PB85-242097

SMALL GENERATOR DEMONSTRATION PROJECT



health

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HEALTH DEPARTMENT

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SPRINGFIELD, VA. 22161

EPA - 910/9-85-124

SMALL GENERATOR DEMONSTRATION PROJECT

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Grant Number S811262-01-0

February, 1985
Final Report
Tacoma-Pierce County Health Department
Tacoma, Washington 98408

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA 910/9-85-124	2.
3. RECIPIENT'S ACCESSION NO. PB85 242097 7AS	
4. TITLE AND SUBTITLE Small Generator Demonstration Project	5. REPORT DATE February 1985
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Tacoma-Pierce County Health Department Tacoma, WA 98408	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO. S811262-01-0
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency Region 10 1200 6th Avenue Seattle, WA 98101	13. TYPE OF REPORT AND PERIOD COVERED
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Small Generator Demonstration Project is an experimental effort to decrease the amount of hazardous waste being mishandled and improperly disposed by small businesses in the South Tacoma area of Tacoma, WA. This one year project is centered around a program of education stressing voluntary compliance to increase recycling and decrease improper waste disposal.

The project is designed to make the alternative waste handling practices presented to the business community easy, inexpensive, and permanent by identifying available disposal resources such as local recyclers.

116 small businesses ranging from the automotive to the wood products industry were visited and notified of safe methods of handling and disposing of their hazardous wastes.

This information resulted in 40% of the businesses with waste handling problems changing to proper waste disposal.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Recycling Waste Disposal Hazardous Waste		

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(This Report)*	21. NO. OF PAGES 38
	20. SECURITY CLASS *(This page)*	22. PRICE

EPA Form 2220-1 (9-73)

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NOTICE

This document is a preliminary draft. It has not been formally released by EPA and should not at this stage be construed to represent Agency policy. It is being circulated for comment on its technical accuracy and policy implications.

ACKNOWLEDGEMENT

This project is a culmination of effort from many entities including the EPA, WDOE, City of Tacoma Sewer and Refuse Utilities, the Tacoma Fire Department, the Tacoma-Pierce County Health Department, and the project Citizens Advisory Committee. Thanks is given to these and the business people and private citizens who participated in this project and whose efforts and dedication made this project a success. Special thanks is given to the City of Tacoma Public Works, Water Division, for their assistance in developing the educational materials.

TABLE OF CONTENTS

Page

Executive Summary 1
Background. 3
Methodology 9
Results 20
Conclusions 23

TABLES

Results of August, 1984 Survey. . . . . .Data Table I
Results of December, 1984 Survey. . . . . .Data Table II

APPENDICES

Informational Poster . . . . . Appendix A
Informational Brochure . . . . . Appendix B - E
Initial Survey Form . . . . . Appendix F
Follow-up Survey Form. . . . . Appendix G
Introductory Letter . . . . . Appendix H
Map of South Tacoma with Business Types. . . . . Appendix I

SMALL GENERATOR DEMONSTRATION PROJECT

EXECUTIVE SUMMARY

The Small Generator Demonstration Project is an experimental effort to decrease the amount of mishandled hazardous waste created by small industries. This one year project is centered around a program of education stressing voluntary compliance to increase recycling and decrease improper waste disposal.

This project was conducted in the South Tacoma Channel area of Tacoma, WA because this area overlays a shallow unprotected aquifer from which Tacoma draws 70 million gallons per day. It is hoped that this project will help maintain the quality of this important water source.

The project is designed to make the alternative waste handling practices presented to the business community easy, inexpensive, and permanent by identifying available disposal resources such as local recyclers.

This project was funded as a demonstration grant under the Resource Conservation and Recovery Act (RCRA) section 8001, "Research, Development, Demonstration and Information". It was directed from EPA's Region X Seattle Headquarters at a cost of $40,000.00 including $5,000.00 in matching funds from the Tacoma-Pierce County Health Department.

One hundred eighteen businesses were targeted in the channel. Twenty-six of those were found to be improperly handling and disposing of their hazardous wastes. Distribution of educational materials to the businesses was responsible for decreasing the amount of mishandled waste by over 2400 gallons per year and the number of contributing businesses from 26 to 16.

BACKGROUND

The South Tacoma Channel is a geologic depression located in Tacoma, Washington. It is approximately five miles long and ranges from one half to one mile in width. This area was created through glacial action during the Pleistoscene Era (approximately 10,000 years ago) which left a deposit of glacial outwash two hundred feet deep in the Channel and surrounding area. The stratigraphy of the area now supports a high yield water aquifer which supplies one third of the city of Tacoma water supply during periods of peak demand. This water is delivered through thirteen high volume wells located in the channel which are capable of producing over sixty million gallons of water per day. The wells are located in a material consisting almost totally of sand and gravel with the average depth to water being forty feet.

Over the past hundred years this area has become industrialized with numerous small and medium size businesses. The variety of businesses ranges from food preparation and restaurants to lumber manufacturing and construction. Many of the businesses are centered around the automotive industry including auto repair, retail sales, and service stations. The Channel also contains many private residences and a public school. A more complete history of the area can be found in the South Tacoma Industrial Waste Survey (Pierce/Rogers, TPCHD 1982).

In 1981 the Environmental Protection Agency (EPA) conducted a priority pollutant scan (a test for EPA's 129 priority contaminants) of the South

Tacoma water supply. The results of these tests revealed concentrations of chlorinated hydrocarbon solvents such as 1,1,2,2--tetrachloroethane, trichloroethylene, and perchloroethylene sufficient enough to be a concern to long range public health in seven of the wells.

One of the wells (12-A) had levels of contamination high enough to warrant immediate removal from service and implementation of protective measures. A series of five "stripping towers" was installed to evaporate the majority of the volatile solvents before channeling the water into the city supply.

The source of this contamination was not readily apparent although it was later found to be a twenty-five year old solvent spill. Some of the potential sources considered by governmental agencies were the numerous small businesses located throughout the channel. In 1982 the Tacoma-Pierce County Health Department (TPCHD) conducted a survey of approximately 150 of the small businesses to determine whether they could present a possible source of contamination. The surveyed businesses were chosen based on their capacity for generating an unregulated quantity (less than 400 pounds per month) of a potentially hazardous material. Those businesses that were regulated as a hazardous waste generator (producing greater than 400 pounds per month) or were not considered to produce a dangerous waste (banks, restaurants, etc.), were not included in the survey.

The survey consisted of visiting each business and interviewing the owner, manager, or an employee. The interviewer asked questions to determine the processes used in the business, the materials used in the processes, the types and quantitites of wastes generated by the processes,

and what form of waste disposal was used. From this survey it was determined that potentially dangerous materials were entering the environment via the storm and sanitary sewer systems, by dumpsters to the city landfill, and by direct dumping onto the very porous material of the South Tacoma Channel. All information was gained under an assurance of strict confidentiality by the interviewer.

These results have led to a collaborative effort by the EPA and the TPCHD to introduce a project into the Channel directed toward reducing the amount of potentially dangerous material entering the environment through a program of education and voluntary compliance. This one year project, which began in December, 1983, is known as the Small Generator Demonstration Project. It used the previously inventoried businesses as a test population.

The following regulations are the basis on which the methodology for the project was developed:

-Current Regulations

Washington Administrative Code (WAC) 173-303 is the Washington State dangerous waste regulation which is a more strict adaptation of the Resource Conservation and Recovery Act (RCRA). The quantity exclusion limit set by WAC 173-303 is 400 pounds. Any hazardous waste generator who produces less than 400 pounds of dangerous waste per month or per batch is excluded from regulation by this code except for section 173-303.050 which states that the Director of the Washington State Departemnt of Ecology (DOE) or his designee may take any action within his power to avert an imminent danger to human health or the environment by a dangerous waste, regardless of the amount.

None of the businesses surveyed produced more than 400 pounds of a designated dangerous waste per month. Other state regulations include:

WAC 173-303.145--"It is illegal for anyone to discharge a hazardous waste in a manner which may allow it to endanger human health or the environment," and

RCW 90.48 -- "It is illegal for any person to pollute the waters of the state."

Local regulations prohibit disposal of hazardous materials into the sewer system or city landfill in any amount which may allow for a toxic condition to exist. Up to 400 pounds of hazardous waste per generator per month may be disposed of legally in a local landfill. Practices at the City of Tacoma landfill, however, forbid the disposal of any known amount of hazardous material.

Sewer Utility Ordinances include:

1) 12.08.020 - No person may discharge into the sewer any material which may cause a fire or explosion or which may damage the Municipal Sewer system.

2) 12.08.080 - Only unpolluted water may enter the storm sewer system.

3) 12.08.140 - No person shall discharge waste water containing more than:

a. 1 part per million (ppm) copper

b. 1ppm lead

c. 50ppm oil or grease

No discharge may be made having a temperature higher than 100 deg. F., or having a pH greater than 9.0 or less than 5.5. Sewer Utilities has stated, however, that unless the level and quantity of contamination is very high and constant, many of these regulations are very difficult to enforce.

Local fire regulations regarding small quantity generators are concerned only with the storage and containment of combustible liquids at this time. The rules addressing these containers state that they should;

1) have lids secured at all times

2) be located a minimum of ten feet from any source of ignition

3) be prominently labeled, the lettering color contrasting with the container color

4) be stored clear of any exits

5) if stored outside, a secure and weather protected area should be considered.

-New Regulations

The Small Generator Demonstration Project was designed to operate with the voluntary cooperation of businesses and without the use of regulatory enforcement. Despite this, new regulations being developed in different sectors may necessitate regulation of at least some of the small generators.

The Resource Conservation and Recovery Act (RCRA) reauthorization of 1984 provides for a reduction of the small quantity exclusion limit from

2200 lbs to 220 lbs on a national level. This change will be enacted in mid 1986 and means that any generator who produces more than 220 lbs of a regulated waste per month or per batch must comply with the requirements of RCRA. This could affect many of the small businesses involved in this project since they often use 55 gallon drums to store waste and this would put them above this limit.

A proposed aquifer protection ordinance could affect every business which handles a hazardous material over the South Tacoma aquifer and could expand to cover Pierce County. It would provide for proper containment, storage, use, and disposal of all hazardous materials. It would call for routine testing of underground storage tanks. Regular inspections would be performed by the local fire departments with the role of enforcement falling on the Health Department. The development of this ordinance was influenced by the Small Generator Project.

METHODOLOGY

The Small Generator Demonstration Project was designed to determine the types and quantities of wastes generated by the test population, the appropriate disposal methods for these wastes, and the applicable federal, state and local laws. This information was distributed to the businesses in the project area and after a few months the effectiveness of the project was evaluated.

-Waste Types and Quantities

The wastes determined from the preliminary industrial survey were quantified under six different types (see Table 1). Oil and grease included waste crankcase oil and other hydrocarbons such as transmission and brake fluids. D-solve included degreasing solvents such as mineral spirits but was meant to exclude halogenated hydrocarbons. P-solv included waste paints, paint sludges, and paint solvents such as laquer thinner. Toxics included halogenated hydrocarbon solvents, pesticides, and other highly toxic or potentially toxic materials. The caustic materials included caustic and hot dip tank contents. The materials which failed to fall under any of the previous lists were grouped under miscellaneous.

All of these types of materials were categorized as being disposed correctly or incorrectly. Correct disposal denotes that the material was being handled in a manner which assured that it would not enter the environment in a detrimental fashion. This may have meant recycling by a

dependable firm (one who's handling practices won't allow the material to become a further problem), refining for use as a different product (waste oil), or disposal in a landfill permitted for that material. Incorrect disposal meant that the material was being disposed in a manner which allowed for, or potentially allowed for entry into the environment. All amounts listed are rough estimates of actual amounts. Some of the reasons for inaccuracy included lack of record keeping on waste amounts, lack of knowledge due to the fact that the interviewee was not directly involved in the waste disposal process, and a reluctance to give correct information on improper waste disposal because of fear of retribution.

-Advisory Committees

One of the major components of the project was the creation of committees to assist in program development and to aid in determining the most feasible alternative disposal methods for the wastes. The first was the Citizen Advisory Committee (CAC). It was comprised primarily of business persons from some of the involved South Tacoma businesses. The 150 businesses surveyed included eight basic types of industry. These include auto retail and repair shops, machine shops, cleaners, auto body shops, printers, paint equipment and supplies, fuel oil, and lumber manufacturers. One person from each of these categories was included on the committee in order to adequately represent the special needs and problems of each type of industry. The committee also included representatives of the League of Women Voters, EPA, Tacoma-Pierce County Health Department (TPCHD), and other interested citizens. The purposes of this committee were to;

1) provide input from the business sector concerning the feasibility of waste handling alternatives,

2) contribute additional ideas on handling alternatives,

3) act as liason between the Health Department and other South Tacoma businesses.

4) Act as a media contact for the project in the event that reactions of affected business were required by the media.

The second committee was the Technical Advisory Committee (TAC). This team consisted of representatives of agencies which have an interest in the project. These included EPA, DOE, City of Tacoma Refuse and Sewer Utilities, Tacoma Fire Department, a recycling firm, two members of the CAC and the TPCHD. The function of this committee was to provide technical input concerning environmentally safe and legal waste disposal options. It also made recommendations on program development and the content of the educational pamphlet. Any recommendations were sent to the CAC for a feasibility review from the businessperson's viewpoint. All information and recommendations, once accepted by both committees, were published in the pamphlet.

Two committees were formed instead of one because it was felt the presence of regulatory personnel would inhibit the response to the project by involved business people.

-Recommended Disposal Methods

The recommended disposal method for most of the wastes is centered around recycling. There is a ready market available in the private sector for materials in the oil and grease, degreasing solvents, and paint solvents categories.

Almost all disposal options required contacting some firm in order to properly dispose of a material. A list of approved resources for recycling and disposal was available at the back of the pamphlet. Those resources are also listed on a durable poster that could be hung on a wall in each business for convenience.

-Oils and Greases: Oils, grease, transmission and brake fluids can be stored together and are easily recycled as long as more flammable materials are not included. Most recyclers will pick up 55 gallons or more. Smaller amounts may be taken to gas stations or all service recycling centers.

-Degreasing Solvents: Employment of solvent services such as Safety Kleen and Rapid Clean is recommended because they beneficially recover the solvents and dispose of the residues in an environmentally safe manner. Businesses which service their own solvent tanks are urged to re-use their solvents and dispose of their waste sludges at a chemical disposal company.

-Paint Solvents: Dirty paint solvents are recyclable and should be stored for pickup by or delivery to a paint solvent recycler. Old useable paints can be used by local acting companies and service organizations such as the Salvation Army.

-Caustic and Hot Dip Tanks: Employment of a service is recommended for

these materials also. Self service tank contents and sludges should be taken to a chemical disposal company.

-Acids/Toxic Materials: These materials and their specific disposal recommendations are too numerous to describe here or in the pamphlet. Businesses with these materials should call the Health Department or a chemical disposal company. Disposal options may include neutralization, transfer of material to another business which can use the material, treatment of material to reduce volume, and disposal at a chemical disposal company.

-Emulsified Oils: Soapy water and emulsified oils from car and truck washing operations should be going into the sanitary sewer rather than a storm drain. Any business which has an oil and grease concentration greater than 50 ppm. should contact the Tacoma Sewer Utilities or W.D.O.E. for pre-treatment requirements.

Not all materials encountered were dealt with on this type of general basis. Those buisnesses which had a material or situation for which the disposal option was not readily apparent were encouraged to call the Health Department or other qualified entity for assistance.

-Pamphlet Development

An educational pamphlet was developed for the project through the assistance of the advisory committees (see Appendices B through E). The pamphlet contains information on the problems with hazardous materials, how they are currently being handled, which disposal method should be used, current and future regulations, general housekeeping, and where to go for

help. Several drafts of the pamphlet were developed. These were then reviewed by the two committees in order to insure technical accuracy and practical feasibility. The draft was then taken to a public relations firm who rewrote the draft for public understanding, added graphics for emphasis, and packaged everything in an attractive pamphlet. They also produced a matching 11 inch by 14 inch durable poster with all the contacts listed for disposal of wastes and assistance (see Appendix A). This poster was intended to be posted in a conspicuous place in the work area.

-Public Relations

It was felt that the success of the project would greatly benefit if a large number of people were made aware of its aims and goals. This could best be accomplished through the use of local television, radio, and newspaper media. A public relations firm was hired for this purpose that was also capable of assisting in development and printing of the pamphlet.

After the pamphlet was printed, they prepared press releases and notified local media about the project and the distribution of material that would soon occur. This resulted in several television and radio interviews that were successful in reaching and raising concern in the public.

-Information Dissemination

The phase of the project involving the distribution of the educational materials to the businesses was considered to be one of the most important aspects of the project. The method of distribution and the attitude of the businesses would have a major bearing on the success of the program.

Several methods of distribution were considered ranging from postal delivery to individual visits from project personnel to each business. The latter method was chosen because it was felt that this method would allow a much better opportunity to impress upon each business the severity of the problem of small quantities of hazardous waste and also the importance of this project. It also provided for an up to date assessment of waste types, quantities, and handling practices.

The actual distribution was preceded by a letter to each business stating that a representative of the TPCHD would be visiting their establishment to provide information on hazardous waste (see Appendix H). This was coupled with a large scale media push which included radio, television, and daily and weekly newspapers in order to bring more interest and attention to the project. Even though there was widespread coverage in the media, few of the businesses appeared to have much previous knowledge of the project. One possible approach which may provide more results would be inserting articles in specific trade journals or club publications which would be more specific to the target businesses.

A total of 118 businesses were visited during the three week period between August 20, and September 7, 1984. These were the same businesses that were inventoried in the Spring/Summer 1982 Study. The number was decreased from 149 for several reasons. Ten went out of business, three changed their business (auto dealership changes to sales only - no service or waste), three moved out of the area, two were currently being investigated by DOE, and twelve were ruled out when it was determined that they didn't handle or produce a hazardous waste.

Several businesses had changed hands and were unable to be contacted. Two were contacted and introduced to the project.

Project staff contacted each business by phone to set up a meeting time with either the owner, supervisor, or foreman rather than an employee. This was a very time consuming process because many of the contact persons were difficult to reach. It was felt that this approach was more efficient than spontaneous visits and it assured that the contact would have adequate time to discuss the project once the meeting had been set.

The visit itself consisted of meeting with the contact person, explaining the aim of the project, how this project affected them, and how stricter regulations were forthcoming. The staff person presented the contact with the educational pamphlet and poster along with a brief explanation of the information included in the pamphlet, how it was designed to work, and how the information could be used to help the small business person improve his waste handling practices and comply with current regulations. The contact was then urged to display the poster in a visible area to provide easy access and to promote interest and concern.

After explaining the goals of the project, the staff person filled out a simple survey form (see Appendix F) to update records on waste types, quantities, handling practices, and general business information. The form included an area for comment on how each business or person received the project information and how much they were willing to cooperate with the interviewer.

The interviewer then requested a tour of the facilities and an explanation of the process used in the business. The general areas

emphasized during the tour included oil and grease recovery, degreasing solvent systems, sludge disposal, storage of waste, presence of pesticides or other toxic materials, methods for storing and transporting wastes, drainage systems, signs of indiscriminate dumping, and general housekeeping procedures. The contact was then informed of any of these areas which needed improvement and given some suggestions about how to accomplish the improvements. They were also shown how the pamphlet could help them to solve any of their problems. They were then encouraged to call the listed agencies for any questions they might have. As a parting note they were informed of the follow-up survey to be conducted in three months to determine the effectiveness of this approach to hazardous waste management and its effect on their individual business.

The response to the distribution of businesspersons was very favorable. Approximately 90% of the contacted persons received the distributors with interest and genuine concern for the environment. Many asked about questionable practices they performed but were unaware of a better method or informed the interviewer of another business which had questionable practices. Most of the remainder of the businesses were cooperative but appeared to lack any interest and tolerated the survey as more government control. Only one business was totally uncooperative and refused to allow an interviewer on site.

Each visit lasted 30-45 minutes and depended on the size of the business and the interest of the contacted person.

-Follow-Up Survey

A lag period of three months was allowed for businesses to begin using the information contained in the pamphlet and poster. During this time a few more media interviews were conducted to increase awareness.

Three months was chosen as the lag period in order to allow the businesses to generate enough waste to require disposal. Even so, many businesses produce waste at such a slow rate that they may not require disposal for a year or more. Those businesses may not indicate a change in waste handling practices until a much later date.

The follow up survey was conducted to determine the effect the program had on the test population and to assess the ability of this non enforcement approach to decrease the amount of hazardous waste being improperly handled by small quantity generators.

The follow up survey was conducted in two phases. The first phase involved contacting by phone those businesses who, during the initial distribution, were determined not to have a significant problem with handling or disposing of waste. The intent of the phone interview was to determine if the business had made any use of the information, if any other persons had made use of the information, and to determine the response of those businesses to the project. This phase involved about 92 businesses. See Appendix G for a copy of the form used in this survey.

The second phase involved the rest of the businesses that were determined to have a problem in handling or disposing of wastes or had a problem with housekeeping. Project officials decided that visiting each of these industries once again would add emphasis to the recommendations already suggested by the inspectors and also allow them to determine just

what, if any, changes were made. The same person was contacted as in the distribution phase to set up a meeting. The questions asked were the same as in the phone interviews, concentrating on the questions on changes in handling practices. Any changes were verified along with the amount of waste. If the business had failed to make the changes recommended in the first visit, these points were re-emphasized along with the reasons for making the cahnges. It will be difficult to determine if the follow-up survey had any further effect on reducing the amount of hazardous waste entering the environment since additional follow up surveys have not been planned. The TPCHD may elect to continue monitoring in order to increase compliance with proper waste management practice.

RESULTS

Data Table I describes the results of the distribution and preliminary survey done during August and September, 1984. This data includes the waste by type and amount and whether the type of disposal was correct or incorrect. It also includes the number of businesses which contributed to each specific waste and the percentage of businesses which were disposing of waste incorrectly.

Data Table II describes the results of the follow-up survey done during December, 1984. These figures reflect the changes in handling and disposal practices in the businesses brought about by the distribution of the educational materials and inspections by project personnel. It reflects the amount of waste that changed from incorrect to correct disposal. Two new categories are added to this table as compared to Data Table I. The first is the percentage of change of business switching from incorrect disposal to disposal methods which protect the environment. The second new category reflects the changes, if any, that the program caused in actual waste amounts.

This data is to be used for basic comparisons only. There are several reasons why any direct comparisons of this material should be considered inaccurate. The major reason is due to the inaccuracy of the amounts reported by businesses. Since small generators are not required to keep records on waste amounts, the amounts reported to investigators were only rough estimates. Also, in many cases, the contact person was different with

each survey which led to additional inconsistency. In several cases the contact was unable to even estimate an amount of waste. One example of this was the person who reported that he used about 150 pounds of caustic flakes each year but had no idea how many gallons of solution went down the drain.

One additional cause for inconsistency between reports is brought about by changes in handling practices. If a business changed from servicing their own solvent tank to employing a solvent service, the waste amounts would change from about 5 gallons per year in the incorrect disposal column to around 240 gallons per year in the correct disposal column.

One final reason is caused by one time events. Several businesses were listed as having a problem with waste because they had a material stored on site which they no longer used but were unsure how to correctly dispose of it. Examples of these materials include exotic paints, small batteries, pentachlorophenol, and some toxic solvents. These wastes were not produced on an ongoing basis and once the business was assisted in properly disposing of the material, would no longer produce it in an ongoing or measurable basis.

A more concrete basis for determining the effect of the project may be to determine the number and percentage of businesses which enacted a change in waste handling or disposal practice. Of the 118 businesses visited in the distribution phase, 26 were determined to have a problem with waste disposal, 72 were currently disposing of their waste in an acceptable manner, and 20 were not currently producing a waste.

The follow-up determined that of the 26 problem businesses, 10 had changed their waste handling practices to an acceptable manner.

Even among the 72 correctly disposing of waste, 14 made favorable changes due to the distributed materials ranging from labeling barrels to the installation of an oil and water separator. Many of those that made changes originally had problems with waste disposal but were exposed to project recommendations through participation in the advisory committee.

The response the businesses made to the ideas, recommendations, and personnel of the project was extremely favorable. Most understood the reasons for the project and were environmentally conscious. Several, including one all service recycler, offered their services for handling or disposing of small quantities and in so doing became a part of the solution. Only one business was uncooperative and refused to allow inspectors on the premises.

CONCLUSIONS

This project was responsible for reducing the number of businesses having problems in disposing of hazardous waste by almost 40% and for drastically increasing the amount of environmental awareness and concern through the distribution of educational materials. The amount of hazardous waste being detrimentally disposed in the environment was decreased by at least 2400 gallons per year and the amount being properly disposed of was increased by over 2800 gallons per year. This is extremely significant when it is realized that only a few gallons of certain materials can seriously damage the environment and drinking water supplies.

Success for the project was realized in several different ways. One business had held onto 400 gallons of paint for years because they were unsure of proper disposal. Staff persons had them contact the Salvation Army which was very pleased to receive the paints. Another company had a partial barrel of toxic pentachlorophenol which was given to a firm to use as a wood preservative. Both businesses benefited and it cost them nothing.

Several businesses made use of the information even though they didn't have a waste handling problem. One changed the firm which handled his degreasing solvent. He found the new service to be much more convenient. Another business person used the information to find a new paint thinner recycler. They picked his old thinner up for free and in return sold him a powerful, low cost, wash grade thinner.

The increased exposure due to the posters was also responsible for several inquiries about proper disposal of wastes from businesses who weren't even in the survey.

Many other examples of success like these were encountered by staff persons throughout the project.

During the planning stages of this project, it was hoped that 20% of the businesses with waste handling problems could be changed. This figure was practically doubled and in the process several other approaches were conceived which may further increase success in future projects. These include increased publicity, especially in local newspapers and trade journals in order to make people more aware of disposal options and to increase public pressure and awareness. Additional assistance may be gained through stricter regulations which allow for periodic inspections and elementary waste record keeping and a clearer interpretation and explanation of current regulations. Financial subsidy for waste disposal and transportation operations would decrease the cost of waste disposal and increase the cooperation of businesses in correctly disposing of their wastes.

The success of this project depended on the presence of local agencies or businesses which were capable of transporting, treating, disposing, or recycling each of the waste types present. Any approach at controlling wastes through voluntary measures will be feasible only if the methods exist locally to deal with those wastes in an economical fashion. The biggest detriment to waste control appears to be cost.

A local resource is also necessary to coordinate the efforts of businesses who are attempting to dispose of their wastes correctly. The TPCHD maintains an ongoing policy of assisting businesses and homeowners in finding adequate and proper disposal for their small quantities of hazardous wastes. This is normally accomplished by either contacting someone who can use the material to be disposed or by contacting the proper disposal resource.

Recommendations for future studies to better determine the success rate include having project personnel continue from the planning stages through the end of the project and to set up methods from the outset that will insure accurate quantitative assessment of hazardous waste amounts and handling practices.

This project was conducted in two major steps with each being conducted by different personnel. The first was the waste inventory conducted in 1982 and the second was the educational mode conducted during 1984. The different methods employed in these steps resulted in the majority of the data being incomparable.

An increase in the amount of lag time between distribution of educational materials and a follow-up survey may also increase the success rate. It is expected that additional businesses will begin compliance after they have generated enough waste to warrant disposal but may only require additional time to do so.

The success rate of this project was great enough that plans are being made to expand the distribution of educational materials to all small generators in Pierce County. Compliance of businesses with proper waste

disposal methods is expected to be increased through the development of an aquifer protection ordinance which is currently being proposed.

SMALL GENERATOR DEMONSTRATION PROJECT

Generated Waste Types and Quantities

AUGUST 1984 SURVEY
118 Total Businesses

Waste Types	Totals		Correct Disposal				Incorrect Disposal			
	Quantity Gallons/Year	Number of Businesses	Quantity Gallons/Year	%	Businesses #	Businesses %	Quantity Gallons/Year	%	Businesses #	Businesses %
Oil and Grease	95612	55	95458	99	51	93	154	<1	4	7
Degreasing Solvents	7819	35	6269	75	19	54	1550	25	16	46
Paint Solvents	4001	17	3068	77	11	65	933	23	6	35
Caustic	2030	4	1820	90	2	50	210	10	2	50
Toxic[1]	165	1	165	100	1	100	0	0	0	0
Miscellaneous[2]	4042	7	2065	51	2	29	1977	49	5	71

1 Includes pesticides

2 Includes unclassified sludges, paint skins, print shop developers

DATA TABLE 1

SMALL GENERATOR DEMONSTRATION PROJECT
Generated Waste Types and Quantities

DECEMBER 1984 SURVEY
118 Total Businesses

Waste Types	Totals: Quantity Gallons/Year	Totals: Number of Businesses	Correct Disposal: Quantity Gallons/Year	Correct Disposal: %	Correct Disposal: Businesses #	Correct Disposal: Businesses %	Incorrect Disposal: Quantity Gallons/Year	Incorrect Disposal: %	Incorrect Disposal: Businesses #	Incorrect Disposal: Businesses %	Amount of Change to Correct Disposal: Quantity Gallons/Year	Amount of Change to Correct Disposal: Businesses #	Amount of Change to Correct Disposal: Businesses %
Oil and Grease	95612	55	95458	99	51	93	154	<1	4	7	0	0	0
Degreasing Solvents	7819	35	7340	93	25	71	479	7	10	29	1071	6	17
Paint Solvents	4001	17	3058	77	11	65	933	23	6	35	0	0	0
Caustic	2430	5	2220	91	3	60	210	9	2	40	400	1	10
Toxic[1]	165	1	165	100	1	100	0	0	0	0	0	0	0
Miscellaneous[2]	4042	7	3445	85	5	71	597	15	2	29	1380	3	42

1 Includes pesticides

2 Includes unclassified sludges, paint skins, print shop developers

DATA TABLE II

HOW TO DEAL WITH TOXIC WASTES

AND LIVE TO TELL ABOUT IT

A list of agencies is provided for your convenience.

AGENCIES:

Tacoma-Pierce County Health Department
591-6450

Washington Department of Ecology
459-6000

U.S. Environmental Protection Agency Waste Management Branch
442-1253

City of Tacoma Sewer Utilities
591-5588

Tacoma Fire Department
591-5740

If you have questions regarding health aspects of handling hazardous materials, call the Health Department Nursing.
591-6480.

Waste oils

Petroleum Reclaiming Service, Inc.
383-4474 (Tacoma)

United Drain Oil Service
759-3537 (Tacoma)

Small Quantities
1-800-RECYCLE

Caustic and hot dip tanks

Rapid Clean
778-8161 (Monroe)

Degreasing solvents

Safety Kleen
939-2022 (Auburn)

Rapid Clean
778-8161 (Monroe)

All *toxic* waste and
Chemical disposal

Chemical Processors
1-800-228-7872

Paint solvent recycling

Lacquer Distributors
383-5747 (Tacoma)

Safco Inc.
824-4973 (Seattle)

As of the date of this printing, this list is approved by the Washington Department of Ecology. This list may not be complete and does not constitute a recommendation. Check with your recyclers to see if they are D.O.E. approved.

This was developed in conjunction with the U.S. Environmental Protection Agency. It has not been subjected to the agency's peer and administrative review, so no official endorsement should be inferred.

Hazardous Waste Transporting
Resource Recovery Corp
1-800-228-7872

IN AN EMERGENCY:

In case of an emergency involving hazardous materials, you should call one of the following agencies.

Tacoma Fire Department
627-0151

Tacoma Poison Center
272-1281

Spill Hotline
Washington Department of Ecology
1-753-2353

U.S. Coast Guard
1-858-9998

TOXIC WASTE DISPOSAL PROGRAM

Produced by Tacoma-Pierce County Health Department and Water Division, Tacoma Public Utilities

HOW TO DEAL WITH TOXIC WASTES AND LIVE TO TELL ABOUT IT

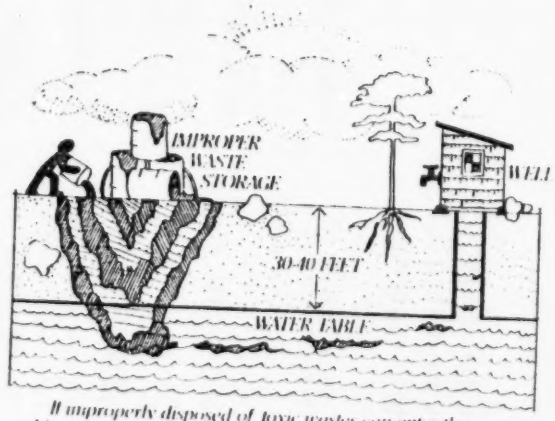
APPENDIX B

EVERYBODY'S HEALTH, EVERYBODY'S PROBLEM

A fresh, clean and uncontaminated supply of drinking water is essential for sound public health. But in recent years, a serious question has been raised about the safety of our municipal water supply. The Environmental Protection Agency has discovered that some of our drinking water sources contain chlorinated hydrocarbon solvents — substances which, if consumed in sufficiently high concentrations, can cause cancer in humans and animals.

Some of the hazardous substances found in the city's water supply may be there because many small businesses incorrectly dispose of waste materials such as oils, acids, grease, paint thinner and solvents. Poured onto the ground, down sewers, or placed into land fills, these chemicals work their way through the soil and sewer system and enter our environment and often our water supply. There, they create a health hazard that becomes everybody's problem.

Local, state and federal laws prohibit disposal of hazardous wastes in ways that allow them to endanger the environment — regardless of concentration or amount.



If improperly disposed of, toxic wastes can enter the public water supply and endanger the health of the community

WHICH SUBSTANCES ARE HAZARDOUS?

There are many substances which can be toxic to the environment *and* the people who occupy it, if disposed of incorrectly. Among these are:

Oils and greases.
Parts cleaners and solvents.
Paints and thinners.
Acids.
Hot dip tank solutions and caustic soda.
Pesticides and other toxic materials.

If your business is currently disposing of these or similar materials in a way which allows them to enter the ground, sewer system or atmosphere, you are contributing to a health hazard.

A WIDESPREAD THREAT

Tacoma is not the only community that is having a problem with contaminated drinking water. Soil and water contamination by chlorinated hydrocarbons is widespread. The pollution is not the fault of small business operators alone. There are many others who share the blame — and the responsibility. Over the years, countless numbers of individuals have contributed to the problem by dumping hazardous chemicals directly into the environment. Small businesses can both perform an important service for the community and set a good example by following proper disposal procedures.

There are state laws regulating the disposal of hazardous materials. At the present time, most of these laws apply only to those businesses which produce more than 100 pounds of hazardous wastes in a month. The limit may soon be reduced to 100 pounds.

Even if the amount of hazardous waste you dispose of monthly does not go over these limits, it is required that you safely and properly dispose of potentially hazardous substances. This brochure provides guidelines for correct waste disposal.

NO EASY ANSWERS

Because hazardous materials have serious health consequences for both present and future generations, it is important that action be taken quickly to assure the public has a safe supply of drinking water.

Unfortunately, appropriate disposal may seem difficult for a small business to arrange. Sanitary landfill operators cannot accept hazardous substances. And commercial recyclers set minimum amounts which may make it impossible for you to dispose of your company's hazardous wastes through their services.

There *are* alternatives. It is relatively inexpensive and fairly easy to dispose of most hazardous wastes — if you know how to store the wastes safely, and where to call to arrange for disposal.

WHERE DO I START?

A list of recyclers and disposal contacts is provided in this brochure. Some of them may pay money for your hazardous wastes. Most importantly, however, by using their services, you are ensuring that toxic materials will not contaminate our community and be injurious to the public.

It is impossible to set general disposal guidelines for acids and pesticides, because these types of toxic materials include a wide variety of chemicals and proper disposal methods vary with each. What you as a businessperson should be aware of is that improper disposal or neutralization of acids may cause the release of deadly gases, or start a fire. For correct disposal information about acids, pesticides and other poisonous wastes, contact the appropriate agency from lists which follow.

All of the hazardous substances in the remaining categories can be summarized in the following disposal options.

RECOMMENDED DISPOSAL OPTIONS:

Oils, greases, transmission and brake fluids, and most other oil-based lubricating fluids.

Most oil-based lubricating fluids may be combined for storage and are easily recycled. Many service stations and all service recycling centers will accept small amounts of oils uncontaminated by gasoline, solvents or other flammable materials. Most recycling services will pay for lubricants in quantities of 55 gallons or more, and will even make collection calls.

Parts cleaners and degreasing solvents.

There are several recyclers in the Tacoma area which offer solvent services. It is safer and more convenient for you to have your solvents handled by one of these services, because you will not need to maintain your own solvent tank. If you do choose to service your own tank, the sludge should be collected and taken to a chemical disposal company. ***Do not put it in the garbage or pour it onto the ground.***

Paint solvents.

Even in small quantities, paint solvents are easily recycled by contacting a paint solvent recycler. Paints which are still usable can probably be put to good use by a charitable organization, or a local theater which may need it for painting sets.

Caustic and hot dip tanks.

The contents of caustic baths and hot dip tanks should not be poured down the drain since they usually contain grease and oil, metals, and caustic sodas. If you perform your own service on your tank, be sure to take the waste solution to a chemical disposal company. We do, however, recommend that you use a tank service. Tank services pump and dispose of the sludge safely for you, and renew the strength of your tank solution. They can provide you with a tank or service your existing tank.

Emulsified Oils.

Emulsified oils are oils and greases that are suspended in solution by cleaning agents. After passing through an oil-water separator, these materials may go into the sanitary sewer. The oil-water separator should be pumped and serviced regularly.

APPENDIX C

STORING HAZARDOUS WASTES SAFELY

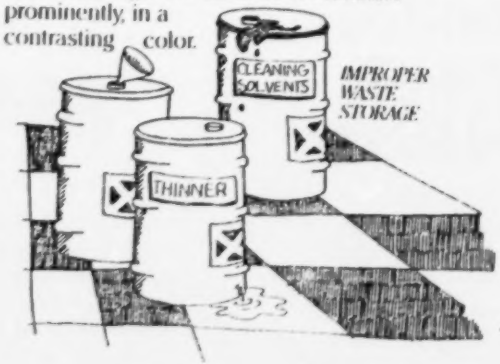
Whichever chemical waste your company produces, you will need to store the materials until pick-up can be made. Storage areas should be protected from the weather and located on a surface which does not readily absorb moisture so that spills can be easily contained. The best surfaces for this purpose are concrete floors and pads. This type of artificial surface will minimize the absorption of most hazardous materials, with the exception of acids.

Most wastes can be stored in several different types of sealed containers — either large storage tanks, 55 gallon drums, or five gallon buckets. Inexpensive plastic lids are available for 55 gallon drums.

Not all materials can be stored in metal drums. Acids will dissolve metals as well as concrete. Contact your supplier for proper storage methods.

If a funnel is used for adding material to a storage drum, it should be removed immediately after use. Otherwise, water may enter the container and displace the waste materials, resulting in overflow.

The Tacoma Fire Department requires that combustible materials be placed in approved containers with secured lids. Place the container at least ten feet from ignition sources, and away from building exits. Label the containers prominently, in a contrasting color.



As little as 55 gallons can categorize you as a hazardous waste generator under State law. Your hazardous waste should be disposed of or recycled regularly. If you have questions about the safe storage of a waste material, call one of the agencies or recyclers listed in this brochure.

LITTLE THINGS CAN MEAN A LOT

Sound health and environmental practices start with little things. If a spill does occur, it should be contained immediately with an inert absorbent materials such as clay cat litter. Do not clean up with a solvent solution if the rinse will find its way into the storm drain or sanitary sewer.

A material that doesn't get spilled won't need to be cleaned up. And it won't be hosed out into the environment. So, general good housekeeping practices and care in materials handling goes a long way — both in keeping a clean shop, and in protecting the public health.

WHAT'S IN IT FOR YOU & ME ?

In the future, regulations may require the registration and strict monitoring of all waste and handling practices. Mishandling of hazardous wastes can be extremely costly to businesses and to the public. But at the present time, voluntary compliance is being strongly stressed. Voluntary compliance now with the suggestions contained in this brochure is likely to be worth millions of dollars of clean-up in the future.

Proper handling of toxic wastes is advantageous to you as a businessperson and as a private citizen because it offers:

Money for some recycled materials.
A cleaner, healthier work environment.
Increased employee efficiency.
Easier and fuller compliance with current governmental regulations.
A safer environment for you and your family.

APPENDIX D

IF YOU NEED MORE INFORMATION

If you need more information, just call the appropriate listing. You'll find help waiting. Help that will enable you to maintain the quality of Tacoma's environment — for yourself and for future generations.

AGENCIES:

Tacoma-Pierce County Health Department 591-6450

Washington Department of Ecology 459-6000

U.S. Environmental Protection Agency Waste Management Branch 442-1253

City of Tacoma Sewer Utilities . . . 591-5588

Tacoma Fire Department 591-5740

If you have questions regarding health aspects of handling hazardous materials, call the Health Department Nursing, 591-6480.

IN AN EMERGENCY:

In case of an emergency involving hazardous materials, you should call one of the following agencies.

Tacoma Fire Department 627-0151

Tacoma Poison Center 272-1281

Spill Hotline Washington Department of Ecology 1-753-2353

U.S. Coast Guard 1-858-9998

Hazardous Waste Transporting Resource Recovery Corp. 1 800 228-7872

APPENDIX E

RECYCLERS & DISPOSAL RESOURCES

Waste oils

Petroleum Reclaiming Service, Inc. . . . . 383-4474 (Tacoma)

United Drain Oil Service . . . . . 759-3537 (Tacoma)

Small Quantities 1-800-RECYCLE

Caustic and hot dip tanks

Rapid Clean . . . . . 778-8161 (Monroe)

Degreasing solvents

Safety Kleen . . . . . 939-2022 (Auburn)

Rapid Clean . . . . . 778-8161 (Monroe)

All toxic waste and Chemical disposal

Chemical Processors . 627-7568 (Tacoma) 1-800-228-7872

Paint solvent recycling

Lacquer Distributors . . 383-5747 (Tacoma)

Safco Inc. . . . . 824-4973 (Seattle)

As of the date of this printing, this list is approved by the Washington Department of Ecology. This list may not be complete and does not constitute a recommendation. Check with your recyclers to see if they are D.O.E. approved.

Special thanks is given to those businesspersons and private citizens who participated in the Small Generator Demonstration Project and whose effort and dedication made this manual possible.

This document was developed in conjunction with the U.S. Environmental Protection Agency. It has not been subjected to the Agency's peer and administrative review, so no official endorsement should be inferred.

TOXIC WASTE DISPOSAL PROGRAM

Produced by Tacoma-Pierce County Health Department and Water Division, Tacoma Public Utilities

NAME OF FIRM _____ Surveyed BY _____

ADDRESS _____

PHONE _____ PERSON CONTACTED _____

GENERAL INFORMATION:

1. Type of Facility _____
2. Number of Employees _____ Years in Operation _____
4. Satellite operations _____

_____

5. Sewage disposal ( ) sewer, ( ) on site, ( ) unknown
6. Storm drain on property ( ) yes ( ) no
7. Treatment system ( ) yes _____ ( ) no
8. Waste disposal ( ) satisfactory ( ) fair ( ) unsatisfactory

   areas for improvement _____

   _____
9. Waste storage ( ) satisfactory ( ) unsatisfactory _____

   _____

Waste	Recycled	Quantity	Comments
( ) Oils & Greases	( )	_____	_____
( ) Degreasing solvents	( )	_____	_____
( ) Paint solvents	( )	_____	_____
( ) Toxics	( )	_____	_____
( ) Caustics	( )	_____	_____
( ) Miscellaneous	( )	_____	_____

GENERAL OVERALL IMPRESSION: ( ) Cooperative ( ) Uncooperative

COMMENTS _____

_____

_____

_____

SMALL GENERATOR DEMONSTRATION PROJECT
FOLLOW-UP SURVEY

NAME OF FIRM _____ CONTACTED BY _____

PHONE # _____ PERSON CONTACTED _____

SIC # _____ DATE CONTACTED _____ DATE PREVIOUSLY CONTACTED _____

WASTE STATUS: No Waste /___/ Waste OK /___/ Problem with Waste /___/

TYPE OF WASTE PROBLEM: _____

_____

ARE THE PAMPHLET AND POSTER STILL AVAILABLE: YES /___/ NO /___/

HAVE OTHER PEOPLE MADE USE OF OR HAD QUESTIONS ON THE DISTRIBUTED MATERIALS?
YES /___/ NO /___/

WHAT RESPONSE HAVE EMPLOYEES MADE TO THIS INFORMATION? A LOT /___/ SOME /___/ NONE /___

WHAT QUESTIONS DO YOU HAVE ABOUT YOUR CURRENT WASTE OR WASTE HANDLING OR DISPOSAL METHODS? _____

_____

_____

HAS THIS PROJECT CAUSED YOU TO CHANGE YOUR WASTE HANDLING PRACTICES? YES /___/ NO /___/

IF YES, HOW _____

_____

HOW MUCH WASTE? _____ (Amount and type)

DO YOU HAVE STORAGE TANKS? NO /___/ ABOVE GROUND /___/ BELOW GROUND /___/

TYPE AND QUANTITY _____

_____

COMMENTS _____

_____

_____

R. M. NICOLA M.D., M.H.S.A. • DIRECTOR OF HEALTH

health

August 8, 1984

Dear Owner/Manager:

During the month of August, a representative of the Tacoma-Pierce County Health Department will be visiting your business to distribute an informational pamphlet covering potential problems and proper solutions for disposal of hazardous wastes.

This visit is targeted toward assisting all small businesses in the South Tacoma area in developing a safe and economical hazardous waste management program.

Individually, the problem may seem small, but collectively, the improper disposal of these waste materials could have quite an environmental impact.

We are also aware that the financial impact on a small business can be substantial in a proper waste management program.

It is our intention to work together with you to minimize the effect on the environment and your budget.

While we are at your establishment, we would like to spend some additional time reviewing your present operation and procedures for disposal of waste products and assist you with any questions.

We realize that your company may not have a hazardous waste disposal problem; however, we would appreciate the opportunity to spend time with you discussing the pamphlet and any potential problems you may be aware of.

As has been our policy in the past, any information obtained by us is held in confidence. If you have any questions, please feel free to call me at 591-6573.

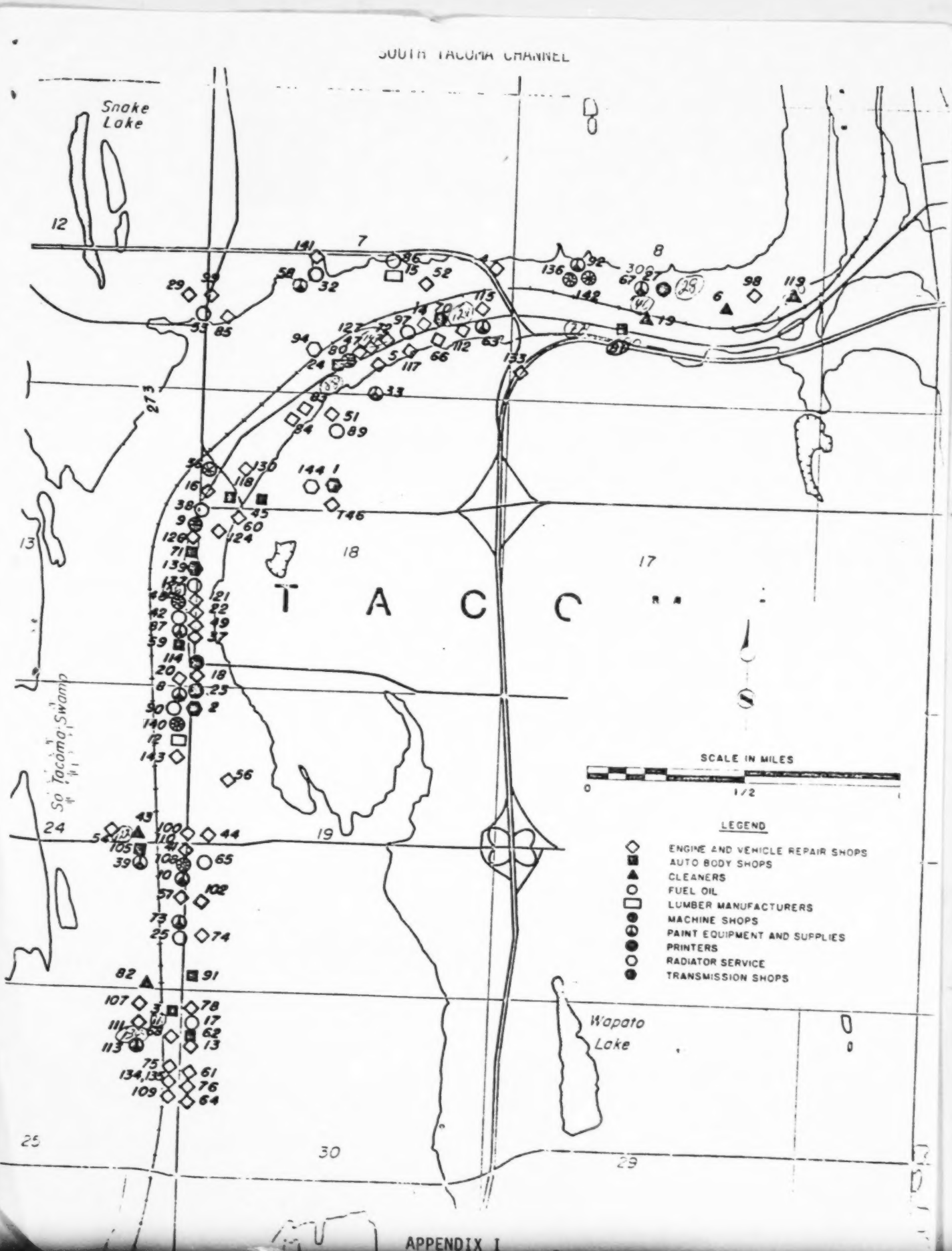
Sincerely,

Russell Post
Environmental Health Specialist
Environmental Health Division

RP/cnh

TACOMA-PIERCE COUNTY HEALTH DEPARTMENT

3629 SOUTH D ST. TACOMA, WASHINGTON 98408


SOUTH TACOMA CHANNEL
Snake Lake
So. Tacoma Swamp
Wapato Lake
T A C
SCALE IN MILES
0
1/2
LEGEND
ENGINE AND VEHICLE REPAIR SHOPS
AUTO BODY SHOPS
CLEANERS
FUEL OIL
LUMBER MANUFACTURERS
MACHINE SHOPS
PAINT EQUIPMENT AND SUPPLIES
PRINTERS
RADIATOR SERVICE
TRANSMISSION SHOPS

APPENDIX I